

ABSTRACT OF THE DISCLOSURE

A simplified process for flip-chip attachment of a chip to a substrate is provided by pre-coating the chip with an encapsulant underfill material having separate discrete solder columns therein to eliminate the conventional capillary flow underfill process.

- 5 There is also provided a flip-chip configuration having a flexible tape lamination for underfill encapsulation. With this configuration, the compliant solder/flexible encapsulant understructure absorbs the strain caused by the difference in the thermal coefficients of expansion between the chip and the substrate and provides enhanced ruggedness.

[illegible]